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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/529,892

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Natsuhiko Mizutani

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EXAMINER

RUGGLES, JOHN S

ART UNIT

PAPER NUMBER

1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/529,892	<b>Applicant(s)</b> MIZUTANI ET AL.	
	<b>Examiner</b> John Ruggles	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 5-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 1-4 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/7/05 &amp; 7/21/06</u>                                     | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

The instant application is a (371) U.S. National stage entry of PCT/JP04/14445 with an international filing date of 9/24/04, which claims foreign priority to JP 2003-334610 filed 9/26/03 (provided in Japanese only without translation). The foreign priority claim remains unperfected.

Applicants cannot rely upon the foreign priority paper(s) listed above to overcome any rejection in this Office action, because English translation(s) of said foreign priority paper(s) have not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

### ***Election/Restrictions***

Applicants' election with traverse of Group 2 (claims 1-4, 10-13) in the reply filed on 2/27/09 is acknowledged. The traversal is on the ground(s) that only nominal additional burden would be required of the Examiner to search Group 1 (claims 5-9) along with the elected Group 2 (claims 1-4, 10-13). However, this is not found persuasive because Groups 1 and 2 were previously shown to have different special technical features (STF) that lack unity and would require separate search strategies. Applicants have failed to rebut this showing for lack of unity between the different inventions of Groups 1 and 2. As clearly indicated at least on page 3 of the 2/2/09 restriction requirement, there would be a serious additional search and examination burden if restriction were not required.

The restriction requirement is still deemed proper and is therefore made FINAL.

Claims 5-9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

### *Specification*

The disclosure is objected to because of at least the following exemplary informalities: **(1)** the entire specification should be carefully reviewed and corrected, for which at least the claim interpretations set forth below in this Office action can be used as examples of changes that must be made to clarify the disclosure throughout; **(2)** at page 14 lines 16-17 (which is abbreviated as p14/L16-17), “ratio of length of width” should be clarified as --ratio of length [[of]] to width--; and **(3)** at p10/L20, “hear-field” is misspelled and must be corrected as ~~--hear-~~ field near-field--.

**(4)** The title of the elected invention is not sufficiently descriptive. A new title is required that is clearly indicative of the invention to which the elected claims are directed.

The following title is suggested: --NEAR-FIELD LIGHT GENERATING METHOD, NEAR-FIELD OPTICAL HEAD, MICROSCOPE FOR OBSERVATION OF SAMPLE SURFACE AND RECORDING APPARATUS INCLUDING THE SAME ~~EXPOSURE MASK, AND NEAR-FIELD EXPOSURE METHOD AND APPARATUS--~~.

### *Claim Objections*

Claims 1-4 and 11 are objected to because of the following informalities: **(1)** in claim 1 at p25/L11, “having a rectangular shape having a length and a width” is repetitive and should be changed to --having a rectangular shape ~~having~~ with a length and a width--; **(2)** in claim 2 at p25/L15, “the light spot” should be changed to --the fine light spot--; **(3)** in each of **(a)** claim 2 at p25/L15-16 and **(b)** claim 4 at p25/L22-23, “the rectangular opening” should be changed to --the rectangular fine opening--; **(4)** similarly, in each of **(a)** claim 3 at p25/L18 and **(b)** claim 4 at p25/L21, “the fine opening” should be changed to --the rectangular fine opening--; and **(5)** in

Art Unit: 1795

claim 11 at p27/L11, (a) “head” should be changed to --near-field optical head-- and (b) “the fine opening” should be changed to --the rectangular fine opening--; all of which are in order to improve consistency throughout these claims. Claims 2-4 depend from claim 1. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1-4 and 10-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which Applicants regard as the invention.**

(A) In claim 1 at p25/L9, it is unclear whether “a light spot” that is formed is either, (1) the same as or (2) different from, the previously recited *fine light spot* at p25/L4-5 (emphasis added). However, for the purpose of this Office action, the passage at p25/L9 is interpreted as --[[a]] the fine light spot--, in accordance with (1) above. Claims 2-4 depend from claim 1.

(B) In claim 10 at p27/L6-8, the text “wherein a light spot having a length and a width which are substantially equal to each other *by the rectangular fine opening*, is formed at a *portion adjacent to an opening portion* on a light outgoing side of *the rectangular fine opening*” (emphasis added) is confusing and repetitive. So, this text must be clarified (e.g. as --wherein a light ~~spot~~ spot, having a length and a width which are substantially equal to each other, ~~other by the rectangular fine opening~~, is formed at a *portion adjacent to an opening portion* on a light outgoing side of *the rectangular fine opening*-- (emphasis added), etc.). Claims 11-13 depend from claim 10.

Art Unit: 1795

(C) In claim 4 at p25/L23, the term “slit-like” renders this claim indefinite, because this claim includes elements not actually disclosed (those encompassed by “-like”), thereby rendering the scope of this claim unascertainable. See MPEP § 2173.05(d). However, for the purpose of this Office action, this term at p25/L23 is interpreted as ~~--slit-like~~ slit--.

***Claim Rejections - 35 USC § 102 or § 103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-3, 10-11, 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueyanagi (US 6,359,852).**

*Ueyanagi* teaches an optical head and an optical disk apparatus (title). The (near field) optical head includes a rectangular fine opening (slit) 7a in a shading film (e.g., metal, etc.) having a width (W) and a length (L), which are different from each other, as illustrated in Figure 1B. The slit dimensions are related as  $L > W$  for generating a fine light spot 9a (of near field light) with a diameter  $D_{1/2}$ , such that  $W < D_{1/2} < L$ . The width (W) of the rectangular fine opening or slit 7a is about 50nm or less, which is one tenth of the incident light wavelength ( $\lambda$ )

Art Unit: 1795

from a laser beam light source ( $W \leq 50\text{nm} \sim 0.1 \lambda$ ), attaining a high recording density of optical disks. The generated near-field fine light spot 9a is illustrated as being relatively circular in shape (so that the fine light spot has substantially equal length and width, *instant claims 1, 10, 13*). This fine light spot 9a is about the same in magnitude (of diameter or size) as the width (W) of the slit 7a in the track direction (X) and the near-field (fine light spot) 9a has a magnitude several times as large as the magnitude in the direction (Y) perpendicular thereto (c8/L41 to c9/L8). Comparison of Figure 1B to Figure 16B illustrates that reducing the length (L), while keeping the width (W) the same, for the rectangular fine opening 7a' in the shading film does not significantly change the size ( $D_{1/2}$ ) of the resulting near field fine light spot 9a ( $W < D_{1/2}$  at the same wavelength ( $\lambda$ ), so  $W \leq 50\text{nm} \sim 0.1 \lambda$ , c18/L48 to c19/L66). The length and width of the near field fine light spot 9a are determined by the width (W) of the rectangular fine opening (slit) 7a (*instant claim 2*). For the rectangular fine opening 7a' shown in Figure 16B, the ratio of length (L) to width (W) are given by  $L/W \sim 1$ , whereas in Figure 1B, the length (L) is on the order of twice the width (2 W) for the rectangular fine opening 7a (so  $L/W \sim 2$ , which encompass *instant claims 3, 11* for a ratio of L/W that is 1.1 to 2).

**Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueyanagi (US 6,359,852) in view of Kuroda et al. (US 2002/0154859).**

*Ueyanagi* (as described above) does not specifically teach: *[1]* that the near field optical head is used in a near field optical microscope for surface observation of a sample (*instant claim 12*) or *[2]* that the near field light generating method utilizes the rectangular fine opening in a plurality of fine openings including a slit opening (*instant claim 4*).

Art Unit: 1795

*Kuroda et al.* teach a near field optical microscope apparatus with a near field optical probe or head therefore (title). The near field optical probe/head has X-shaped or H-shaped aperture(s) including plural rectangular fine openings or slits to provide sufficient near field intensity while allowing reduction of aperture size, which improves resolution (abstract). Figure 11B shows a near field optical head having an array of multiple X-apertures 1103. Incorporating this type of near field optical head in a near field optical microscope will not deteriorate the S/N (signal-to-noise) ratio of a detection signal, even when the resolution is improved, and this near field optical head with plural apertures (including rectangular fine openings and slits) shortens the time required for observation of an object under the near field optical microscope [0089]-[0092].

It would have been obvious to one of ordinary skill in the art at the time of the invention with the near field optical head having a rectangular fine opening that generates a near field fine light spot (as taught by *Ueyanagi*) to utilize the rectangular fine opening with a plurality of fine openings including a slit opening in a near field optical microscope for surface observation of a sample, because incorporating such a near field optical head having the rectangular fine opening along with a plurality of fine slit openings would provide a reasonable expectation of success for shortening the time required to observe the object sample surface when using this near field optical microscope having plural fine slit openings to generate plural near field fine light spots (as taught by *Kuroda et al.*) [1], [2].



Art Unit: 1795

***Conclusion and Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Ruggles whose telephone number is (571)272-1390. The examiner can normally be reached on Monday-Wednesday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/  
Supervisory Patent Examiner, Art Unit 1795

/John Ruggles/  
Examiner, Art Unit 1795